

APPENDIX 15A

Ecosystems Correspondence



United States Department of the Interior
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

In Reply Refer To

FWS/R6
ES/UT
ER03/0431
OALS 03-0766

May 20, 2003

Carlos C. Machado, Program Manager
Federal Highway Administration
2520 West 4700 South, Suite 9A
Salt Lake City, Utah 84118

Donald D. Cover, Project Manager
Federal Transit Administration
216 16th Street, Suite 650
Denver, Colorado 80202-5120

RE: Notice of Intent to Prepare an Environmental Impact Statement for a proposed transportation improvement project in Salt Lake and Utah Counties, Utah

Dear Mr. Machado and Mr. Cover:

The U.S. Fish and Wildlife Service (FWS) has received your Notice of Intent to Prepare an Environmental Impact Statement (EIS) for a proposed transportation improvement project in Salt Lake and Utah Counties, Utah, dated May 2, 2003. The purpose of the project is to address projected transportation demand in the western Salt Lake Valley south of I-20 and the western Utah Lake Valley north of Utah Lake.

By letter dated May 14, 2003, we accepted your invitation to be a cooperating agency in preparing the EIS. We are providing the following comments to assist you as you begin your investigations.

In Section 1 of this letter we convey our concerns that should be addressed in the EIS for this project. Section 2 of this letter addresses your responsibilities under section 7 of the Endangered Species Act (ESA) of 1973, 16 U.S.C. § 1536.

Section 1. The Utah Lake floodplain wetlands and pastures, the fields and rangeland in western Salt Lake County, and the Jordan River corridor provide important habitat for fish and resident and migratory wildlife. These habitats are being lost, fragmented, or otherwise reduced in value and availability very rapidly. Not only are wildlife species and populations at risk, but so also is the opportunity for a majority of Utah residents to experience and enjoy wildlife as a daily component of their quality of life. The purpose of an Environmental Impact Statement is to evaluate the environmental costs and benefits of a project to assist the public in making informed choices. While acknowledging the desire for adequate transportation, we believe it will be especially important for the EIS to:

1. thoroughly analyze all transportation options to develop alternatives that avoid, to the extent possible, loss, fragmentation, and degradation of fish and wildlife habitat due to the highway and associated induced development.
2. clearly identify the environmental trade-offs of each alternative so that the public can make an informed choice among them, including the no action alternative.
3. identify and fully mitigate all unavoidable impacts to wetlands and wildlife habitats.

We previously participated in the North Valley Corridor Connectors Study which evaluated several options for an east-west transportation route between Redwood Road and I-15 in northern Utah County. We assume that this study will provide the basis for development of alternatives for the northern Utah County portion of the proposed Mountain View Highway. The study identified at least one option that largely avoids direct and indirect impacts to the important wetland habitats of the Utah Lake floodplain. There is also an option that would not require a new bridge over the Jordan River. These options should be given serious consideration as transportation alternatives.

The playa wetlands south of I-80 in the Salt Lake Valley provide important habitat for migratory waterfowl and shorebirds. Alternatives should avoid these habitats, including indirect impacts to hydrology.

Due to urban and residential development, livestock grazing, and cheatgrass invasion, many of our northern Utah valley rangelands no longer provide quality habitat for ground-nesting songbirds and upland game species. The Mountain View Highway could exacerbate that, especially through induced development.

Both Salt Lake and Utah counties are troubled with invasive species, which are especially prevalent along transportation routes. The EIS should address how to avoid this problem as a result of construction and maintenance activities if a new transportation feature is built.

water consumption continues to be a concern of citizens and water purveyors. Facilitated growth that requires more water development has direct impacts on our aquatic and riparian habitats. Additional water required for highway landscaping is also a concern. We urge that water use and distribution be addressed in the EIS.

Section 2. Federal agencies have specific additional responsibilities under Section 7 of the ESA. To help you fulfill these responsibilities, we are providing an updated list of threatened (T) and endangered (E) species that may occur within the area of influence of your proposed action.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
SALT LAKE COUNTY		
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	T
Bald Eagle ^{1,3}	<i>Haliaeetus leucocephalus</i>	T
UTAH COUNTY		
Deseret Milkvetch	<i>Astragalus desereticus</i>	T
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	T
Utah Valvata Snail ⁶	<i>Valvata utahensis</i>	E
June Sucker ⁴	<i>Chasmistes liorus</i>	E
Bald Eagle ³	<i>Haliaeetus leucocephalus</i>	T

¹ Nests in this county of Utah.

³ Wintering populations (only four known nesting pairs in Utah).

⁴ Critical habitat designated in this county.

⁶ Historical range.

The proposed action should be reviewed and a determination made if the action will affect any listed species or their critical habitat. If it is determined by the Federal agency, with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is complete, and no further action is necessary.

Formal consultation (50 CFR 402.14) is required if the Federal agency determines that an action is "likely to adversely affect" a listed species or will result in jeopardy or adverse modification of critical habitat (50 CFR 402.02). Federal agencies should also confer with the Service on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10). A written request for formal consultation or conference should be submitted to the Service with a completed biological assessment and any other relevant information (50 CFR 402.12).

Only a Federal agency can enter into formal ESA section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

Your attention is also directed to section 7(d) of the ESA, as amended, which underscores the requirement that the Federal agency or the applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the formulation or implementation of reasonable and prudent alternatives regarding their actions on any endangered or threatened species.

Please note that the peregrine falcon which occurs in all counties of Utah was removed from the federal list of endangered and threatened species per Final Rule of August 25, 1999 (64 FR 46542). Protection is still provided for this species under authority of the Migratory Bird Treaty Act (16 U.S.C. § 703-712) which makes it unlawful to take, kill, or possess migratory birds, their parts, nests, or eggs. When taking of migratory birds is determined by the applicant to be the only alternative, application for federal and state permits must be made through the appropriate authorities. For take of raptors, their nests, or eggs, Migratory Bird Permits must be obtained through the Service's Migratory Bird Permit Office in Denver at (303) 236-8171.

We recommend use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck, January 2002) which were developed in part to provide consistent application of raptor protection measures statewide and provide full compliance with environmental laws regarding raptor protection. Raptor surveys and mitigation measures are provided in the Raptor Guidelines as recommendations to ensure that proposed projects will avoid adverse impacts to raptors, including the peregrine falcon.

The following is a list of species that may occur within the project area and are managed under Conservation Agreements/Strategies. Conservation Agreements are voluntary cooperative plans among resource agencies that identify threats to a species and implement conservation measures to pro-actively conserve and protect species in decline. Threats that warrant a species listing as a sensitive species by state and federal agencies and as threatened or endangered under the ESA should be significantly reduced or eliminated through implementation of the Conservation Agreement. Project plans should be designed to meet the goals and objectives of these Conservation Agreements.

Common Name
Spotted Frog

Scientific Name
Rana luteiventris

If we can be of further assistance or if you have any questions, please feel free to contact Chris Witt or Betsy Herrmann, Ecologists, of our office at (801) 975-3330 extension 133 and 139 respectively.

Sincerely,


for Henry R. Maddux
Utah Field Supervisor

cc: Regional Office, Region 6, Denver, Colorado (Attn: NEPA Coordinator)
UDWR - SLC, Springville
EPA - Denver (Attn: Dave Ruitter)
DOE - Bountiful (Attn: Nancy Kang)



State of Utah

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April 30, 2003

Chris Gruwell
Ecologist
HDR Engineering
3995 South 700 East, Suite 100
Salt Lake City, UT 84107-2594

Dear Mr. Gruwell:

I am writing in response to your request for information regarding species of special concern proximal to a proposed transportation corridor project along the Wasatch Front in southern Salt Lake County and northern Utah County.

The Utah Division of Wildlife Resources' (UDWR) database contains records of occurrence for a number of threatened, endangered, or sensitive species in the project area; a list of species known to occur in the area is summarized in the attached table ([mntview_table.pdf](#)).

The information provided in this letter and the attached table is based on data existing in the Utah Division of Wildlife Resources' central database at the time of the request. It should not be regarded as a final statement on the occurrence of any species on or near the designated site, nor should it be considered a substitute for on-the-ground biological surveys. Moreover, because the Utah Division of Wildlife Resources' central database is continually updated, and because data requests are evaluated for the specific type of proposed action, any given response is only appropriate for its respective request.

In addition to the information you requested, other significant wildlife values might also be present on the designated site. Please contact UDWR's regional habitat manager, Doug Sakaguchi, at (801) 491-5654, if you have any questions. Please contact our office at (801) 538-4759 if you require further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Anne C. Axel".

Anne Axel
Information Manager

Known occurrences in the Mountain View Project Area

Compiled by the Utah Natural Heritage Program, April 2003

<u>Scientific Name</u>	<u>Common Name</u>	<u>Category</u>	<u>State Status</u>	<u>Federal Status</u>
Libellula composita	Bleached Skimmer	Invertebrate Animal	None	
Libellula forensis	Eight-spotted Skimmer	Invertebrate Animal	None	
Fluminicola coloradoensis	Green River Pebblesnail	Invertebrate Animal	None	
Gomphus externus	Plains Clubtail	Invertebrate Animal	None	
Pyrgulopsis kolobensis	Toquerville Springsnail	Invertebrate Animal	None	
Spiranthes diluvialis	Ute Ladies' Tresses	Vascular Plant	None	LT
Pelecanus erythrorhynchos	American White Pelican	Vertebrate Animal	SD	
Toxostoma bendirei	Bendire's Thrasher	Vertebrate Animal	None	
Passerina caerulea	Blue Grosbeak	Vertebrate Animal	SP/SD	
Dolichonyx oryzivorus	Bobolink	Vertebrate Animal	SP/SD	
Oncorhynchus clarki utah	Bonneville Cutthroat Trout	Vertebrate Animal	CS	
Athene cunicularia	Burrowing Owl	Vertebrate Animal	SP	
Rana luteiventris	Columbia spotted frog	Vertebrate Animal	CS	
Thamnophis sirtalis	Common Gartersnake	Vertebrate Animal	None	
Geothlypis trichas	Common Yellowthroat	Vertebrate Animal	SP	
Tyrannus tyrannus	Eastern Kingbird	Vertebrate Animal	None	
Buteo regalis	Ferruginous Hawk	Vertebrate Animal	T	
Aquila chrysaetos	Golden Eagle	Vertebrate Animal	None	
Dumetella carolinensis	Gray Catbird	Vertebrate Animal	None	
Ardea alba	Great Egret	Vertebrate Animal	None	
Vulpes macrotis	Kit Fox	Vertebrate Animal	None	
Melanerpes lewis	Lewis's Woodpecker	Vertebrate Animal	SP/SD	
Numenius americanus	Long-billed Curlew	Vertebrate Animal	SP/SD	
Falco peregrinus	Peregrine Falcon	Vertebrate Animal	E	
Buteo jamaicensis	Red-tailed Hawk	Vertebrate Animal	None	
Bassariscus astutus	Ringtail	Vertebrate Animal	SD	
Grus canadensis	Sandhill Crane	Vertebrate Animal	None	
Asio flammeus	Short-eared Owl	Vertebrate Animal	SP	
Lampropeltis pyromelana	Sonoran Mountain Kingsnake	Vertebrate Animal	SP	
Buteo swainsoni	Swainson's Hawk	Vertebrate Animal	SP	
Bufo boreas	Western Toad	Vertebrate Animal	SP	
Coccyzus americanus	Yellow-billed Cuckoo	Vertebrate Animal	T	C

State Status	
E	Endangered
T	Threatened
SP	Species of Special Concern
SD	Species of Special Concern
SP/SD	Species of Special Concern
CS	Conservation Species
Federal Status	
LT	Listed as threatened.
C	Candidate for listing in Utah.



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UDOT Project No. *SP-0067(3)0

SUBJECT: Wetland Resources Assessment Plan

TO: FHWA

FROM: Vince Izzo, Linda Jones

DATE: July 8, 2004; Revised March 3, 2005, Revised August 31, 2005

Description

The purpose of this memo is to document the decision making process that UDOT, the USACE, and consultants went through to determine how best to evaluate wetland resources within the MVC study area. There have been several revisions, and the memo should be read completely since processes outlined in early steps may have been superseded by later decisions.

The MountainView Corridor (EIS) covers an area approximately 35 miles long and will evaluate highway and transit build alternatives that directly impact both developed and undeveloped areas in western Salt Lake County and northwestern Utah County. As part of the EIS process, potential impacts to wetland resources will be evaluated. Owing to the large size of the project area, the diverse wetland areas, and the nature of the EIS as a planning document, it is neither cost effective, time efficient, nor necessary to conduct a wetland delineation of all project alternatives. Instead, a detailed field reconnaissance and preliminary evaluation of functional value will be conducted to provide sufficient information to allow for comparison of relative potential impacts between alternatives and to maintain reasonable costs for the assessment. Provided below is an approach for conducting the analysis of potential wetland resources within the various build alternatives.

Approach

Step 1

The first step will be to use existing data gathered during the preliminary wetland assessment conducted in May of 2003. These data made use of hydric soil maps from the National Resource Conservation Service and National Wetland Inventory maps from the U.S. Fish and Wildlife Service overlain on aerial photographs and then verified and updated during a "windshield survey" of the MountainView Corridor study area.

Step 2

Step 2 will consist of using the data from Step 1 along with more recent and better resolution aerial maps to further refine the existing data. Additional field

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reconnaissance using the new aerials will be conducted for the proposed alternatives, as opposed to the entire project area. This will allow a more focused comparison of alternatives based on their relative potential for impacts to wetland resources. The U.S. Army Corps of Engineers Corps (Corps) will accompany SWCA ecologists to the field the first or second day to ensure appropriate methodology and technique.

Step 3

Assuming access to private property is available in a timely manner, the proposed alternatives will be physically walked to collect the best information for this level of effort. A 4,000-foot corridor (2,000 feet either side of the center line) for the freeway and arterial alignments will be surveyed as required by the Functional Assessment of Great Salt Lake Ecosystem Slope and Depressional Wetlands (Keate, 2004). A potential jurisdictional wetland will be considered present if it has greater than 50 percent wetland vegetation (FAC or wetter) during the time of the visit. Field notes will be collected with regards to hydrophytic vegetation, obvious hydrology, and other important aspects relative to a wetland area, which will be used in the HGM modeling effort. Hydrophytic vegetation data will include identification of plant species that make up greater than or equal to 20 percent dominance. Questionable areas may need to be revisited and given a more thorough assessment.

For those agricultural fields that contain greater than 50 percent hydrophytic vegetation, they will be considered wetlands for the EIS analysis. This is due to the lack of understanding of irrigation practices and seeding history in the fields, the ongoing use of the fields, the timing of the assessment, the deficit of knowledge regarding historic surface and/or ground water connectivity to Utah Lake and the decision not to dig soil pits at all locations in order to expedite the assessment. Further refinement of these areas will be conducted once a formal delineation is performed prior to project construction.

For those parcels that have been recorded (platted) with the county (or cities), if there is evidence that a parcel is beginning to be developed (e.g., stakes and survey work, blading, actual construction), then the parcel will not be evaluated because it is assumed that the actual development process has begun. If while in the field, there is no evidence of development, even though the parcel has been platted, as suggested by the land use layer (being used for the land use section of the EIS) on the wetland maps, then the area was evaluated it for wetland status.

At this time, there will be no formal field delineations undertaken by the MVC wetland ecologists; to delineate some areas and not others would not allow for comparisons to be made between alternatives with the same level of detail given to each alternative (this decision has been modified, see Step 7). The updated reconnaissance maps will be reviewed by the UDOT, who will coordinate with the Corps to ensure agreement on the protocol.

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Step 4

Using existing functional model, a preliminary assessment of wetland function will be performed. The assessment method will use a modified HGM model that will primarily focus on several variables to help determine functional value of a wetland based on parameters such as proximity to disturbance and land use. This will provide a basis to qualitatively and quantitatively compare wetlands between alternatives.

SWCA proposes to use the Functional Assessment of Great Salt Lake Ecosystem Slope and Depressional Wetlands (Keate 2004, modified June 2005) to evaluate wetland functions within the MountainView Corridor study area. This functional assessment methodology is based on the hydrogeomorphic (HGM) approach (Brinson 1993, Brinson et al. 1995) and includes six different functional capacity indices (FCIs) designed to evaluate how wetlands function with respect to the interception and conveyance of ground and surface water (FCI_{hydro} and $FCI_{inhydro}$, respectively), the removal of dissolved elements and compounds ($FCI_{dissolved}$), particulate retention ($FCI_{particulates}$), flora and fauna habitat characteristics ($FCI_{habitat}$), and wildlife habitat connectivity/patchiness ($FCI_{connectivity}$). While the first four FCIs listed above provide a reasonable assessment of the physical functioning of wetlands, the latter two FCIs relating to vegetation and wildlife habitat are less robust. Consequently, SWCA believes that the interests of the MountainView Corridor EIS would be best served by limiting the wetland function assessment to the calculation of FCI_{hydro} , $FCI_{inhydro}$, $FCI_{dissolved}$, and $FCI_{particulates}$, and evaluating vegetation and wildlife in greater depth and breadth (i.e., including upland habitats) in other sections of the EIS.

There are a variety of reasons for taking this approach. First, $FCI_{habitat}$ is calculated using three variables $V_{habwetuse}$, V_{adjhab} , and $V_{vegstruct}$. $V_{habwetuse}$ and V_{adjhab} are indices reflecting habitat suitability for a variety of different land uses. While Keate (2004) indicates that these indices were derived from Nnadi and Bounvilay (1997), that publication only provides information on how various land uses and stormwater management systems affect concentrations of different nutrients, elements, and compounds. Thus, it is unclear how the wildlife habitat indices were derived and they do not appear to be supported by the scientific literature. In reviewing the two wildlife indices provided in Table 1 of Keate (2004), it is apparent that the indices provided for several land uses may be inappropriate for the MountainView Corridor study area. For instance, $V_{habwetuse}$ and V_{adjhab} each have a value of 0.5 (out of 1.0) for rotational grazing and single-family residential land uses. Rotational grazing is defined as grazing for short periods during the year, between which the vegetation is allowed to recover. In reality, depending on the time of year and the frequency and intensity of grazing, rotational grazing could have no effect on habitat suitability and may even enhance wildlife habitat in some situations. In contrast, residential habitat modifications such as paving, landscaping with ornamental species, and fencing, and the presence of domestic predators such as dogs and cats can cause

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this land use type to be completely unsuitable habitat for all but the most resilient wildlife, typically exotic species such as starlings and house sparrows. As another example, $V_{\text{habwetuse}}$ and V_{adjhab} for sewage treatment plants and lagoons are given a value of 0.1 by the functional assessment model. In our experience, sewage lagoons often support an extraordinarily high diversity and abundance of migratory and resident waterfowl.

According to Keate (2004), the variable $V_{\text{vegstruct}}$ is "a measure of the health and sustainability of the vegetation." $V_{\text{vegstruct}}$ is calculated by adding the ratio of native to non-native dominant plant species to a similarity index and dividing the total by two. The similarity index is determined by dividing the total number of plants in the assessment wetland with the number of plants in a reference standard site. This variable assumes that the ratio of native to non-native species is indicative of the health of the plant community and that the closer the plant community of a wetland resembles the reference standard site, the higher its function as wildlife habitat. While this variable provides a good indication of how much the flora of a given wetland may have been modified over time, it does not necessarily provide a good indicator of habitat suitability. For example, some of the highest native bird diversities that SWCA has observed in the Tooele SAMP study area were in areas where Russian olive, and exotic species, was dominant.

$FCI_{\text{connectivity}}$ is calculated by taking the average of two variables, $V_{\text{connectivity}}$ and V_{mod} . $V_{\text{connectivity}}$ is a measure of the loss of habitat and habitat fragmentation and is determined from a linear regression relating the connectivity score to percent suitable habitat (i.e., Figure 1 of Keate 2004). This variable is essentially a black box. Keate (2004) indicates that the regression model is based on the scientific literature but no specific references are provided and the origins of the data upon which the model is calibrated are unknown. Thus, from a biological perspective, the meaning of this variable is unclear.

V_{mod} is a metric describing the extent to which the hydrology of a wetland has been modified by human land use. It ranges from 1.0 for no modifications to 0.0 for extreme modifications such as the presence of 4-lane highways, large dikes and diversions, etc. While V_{mod} is a useful variable in describing how a wetland is likely to function with respect to the interception of ground and surface water (FCI_{hydro}), it is less pertinent as a variable describing wildlife habitat. Hydrologic modifications such as highways and dikes that impound water can have vastly different effects on wildlife habitat. In some areas such as duck clubs, waterfowl management areas and even industrial areas (e.g., Kennecott's Garfield Triangle), hydrologic modifications that act to impound water actually enhance wildlife habitat. In contrast, the habitat suitability of areas downgradient of these structures may or may not be impacted by reduced surface and shallow groundwater flows. Moreover, different taxa are likely to be affected differently by hydrologic modifications. Waterfowl may benefit from the creation of open-water impoundments and the attendant formation of emergent marsh communities, while

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shorebirds may experience habitat degradation and loss from the same action. Small mammals may benefit from the increase in vegetative productivity around impounded waters whereas larger mammals such as mule deer may be adversely affected by the presence of hydrologic modifications (such as highways) that act as barriers across migratory pathways.

Beyond the arguments presented above, it is advisable to separate the assessment of vegetation and wildlife from the assessment of wetlands in order to avoid confusion among the lay public. EISs typically have separate sections for vegetation and wildlife that describe the affected environment and the environmental consequences to these resources resulting from the proposed action and its alternatives. If the MountainView Corridor EIS provides two assessments of vegetation and wildlife, one related specifically to wetlands via the functional assessment described above, and one related to all lands within the study area, it is likely to confuse the general public. Such confusion could become particularly pronounced and problematic if the application of $FCI_{habitat}$ and $FCI_{connectivity}$ contradict the results of the site-specific vegetation and wildlife analyses provided in other sections of the document.

Based on the arguments presented above, SWCA recommends dropping $FCI_{habitat}$ and $FCI_{connectivity}$ from use in the MountainView Corridor wetlands assessment. However, we propose to retain the variable $V_{vegstruct}$ which will provide a native:non-native vegetation ratio that can be used to assess vegetation integrity as compared to reference wetlands. We believe that the NEPA document will be more defensible and the public better served by limiting the assessment of wetland function to the four biogeochemical-oriented FCIs (FCI_{hydro} , $FCI_{inhydro}$, $FCI_{dissolved}$, and $FCI_{particulates}$) and covering the vegetation and wildlife habitat functions of wetlands in a more detailed, site-specific fashion in separate sections of the EIS.

By conducting a more in-depth field reconnaissance and functional assessment for the alternatives, a valid comparison of alternatives can be completed for the NEPA process. At the time of this memorandum, no construction funds are available; once funding is identified, UDOT will conduct a full wetland delineation of the alternative selected in ROD. It is understood that conditions may necessitate redoing the functional assessment to reflect more recent information that would be gathered during the delineation. This process will also include consultation with the Corps (along with UDOT) and other interested parties based on the results of the delineation of the selected alternative. Finally, it is recommended that the wildlife impact analysis be conducted separately from the HGM analysis and the $FCI_{habitat}$ and $FCI_{connectivity}$ not be used as part of the wetland assessment. See resource agency concurrence to this memorandum below.

Step 5:

In fall of 2004, the HGM model was revised through peer discussion and review, and the current buffer around a wetland has been reduced from 2,000 feet to 300

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feet (except for wildlife, which is not being considered using this model for this EIS; see Step 4). Please reference the June 2005 version of the model for a bibliography of literature used to support this change. This buffer is necessary to address factors considered in the model such as land use, the presence of wetlands, and hydrological parameters as presented in the model. In addition, only wetlands within 300 feet of the ROW edge will be identified, documented, and run through the model. Additional detail is provided below as it relates to wetlands within the actual ROW, the 300-foot buffer, and beyond 300 feet, and how they are evaluated for direct and indirect impacts.

For wetlands within the actual ROW, the amount of wetlands by type (e.g., emergent marsh, wet meadow, playa) that would be impacted (i.e., filled) will be calculated by overlaying proposed ROWs for each alternative. This will be considered a direct impact as a result of placing fill in a wetland. For the purposes of the analysis, it will be assumed that all wetlands within the ROW will be directly impacted.

For wetlands lying outside the ROW and within the 300-foot buffer, the model will be run twice, once for existing conditions, and once for each of the proposed alternatives. For the proposed alternatives, several scenarios may exist.

- a) Wetlands that lie completely within the ROW will be considered to be directly impacted and filled in regardless of fill status.
- b) Wetlands that lie partially within the ROW and partially within the 300-foot buffer will be evaluated based on the percentage of the wetland within the ROW and the 300-foot buffer. The percentage that is in the ROW will be considered directly impacted and filled in, while the portion that is in the 300-foot buffer will be evaluated in the model.
- c) Wetlands that lie completely within the 300-foot buffer will be evaluated in the model.
- d) Wetlands that lie partially within the 300-foot buffer and partially outside the buffer will be evaluated based on the percentage of the wetland within the 300-foot buffer. The portion that is in the 300-foot buffer will be evaluated in the model, while the portion that lies outside the 300-foot buffer will not be evaluated in the model.
- e) Those wetlands that lie partially or completely outside the 300-foot buffer will be considered indirectly impacted. At this time, there is not a method to quantify these indirect impacts, and thus, these wetlands will be qualitatively discussed.

The results of this effort will include:

1. Acreage of direct impacts resulting from the discharge of fill into wetlands within the ROW;

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2. Acreage of unfilled wetlands within the ROW (indirect impacts);
3. Acreage of wetlands within the 300' buffer that will be indirectly impacted;
4. Functional Assessment on all wetlands within the ROW and adjacent 300' buffer; and,
5. Qualitative indirect impact analysis of wetlands outside the 300-foot buffer (drawn adjacent to the ROW).

The Corps and UDOT, by running the functional assessment on all wetlands within the ROW and beyond by 300', will assess functional loss as a result of the project. This functional loss will be used to compare alternatives, determine the LEDPA, and determine mitigation requirements.

Step 6:

Before presenting the next step, it is important to understand that there are two types of buffers that are being used in the model. The first buffer is applied around the wetland, and creates a 300-foot buffer (discussed in Step 5) that allows the model to take into consideration land use around the wetland since this influences many wetland functions. The second type of buffer is applied to a hydrological modification, and is discussed below.

The model addresses hydrological modifications within 300' surrounding individual wetlands and factors this aspect into the calculation of 'Vmod'. Current methodology in the traditional application of the model is based on the severity of the modification's affect on the wetland and the percentage of the wetlands affected by the modification(s) (Keate 2005). A modification coefficient is assigned, which is used to determine Vmod. Because it would be difficult to determine how and to what extent the hydrology is affected by a given modification for all the wetlands that are being considered within the study area, it was determined based on best professional judgment that 100 percent of all areas (wetlands or uplands) would be affected by a given hydrological modification out to 300 feet. This approach assumes that design adaptations would be considered that would permit hydrology to be maintained sufficiently so that wetland areas beyond 300 feet would not be affected. This could include (but not limited to) equalization culverts to maintain surface sheet flow, bridges, culverts, groundwater conveyance structures (e.g., French drains, strip drains, synthetic drainage nets, gravel layers), and other similar engineered structures meant to minimize drainage disruptions. Where a significant hydrological modification exists at a distance greater than 300 feet from a wetland, that modification will be evaluated for potential hydrological influence based on best professional judgment and resource agency concurrence.

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Step 7:

Following discussions with third parties who disputed the preliminary wetlands mapping, the USACE and UDOT has decided to accept USACE-verified delineations that fall within the 300-foot buffer along the alignment alternatives. This was agreed to since wetland delineations provide additional detail regarding the presence of jurisdictional wetlands, which was not collected during the preliminary wetlands mapping. SWCA researched all delineations that have been accepted and verified by the USACE through August 31, 2005 and digitized them to the best of their ability assuming that electronic mapping data was not on file with the USACE. This information will supercede the preliminary wetlands mapping on a site-by-site basis for a given delineation.

Step 8:

For the purposes of the HGM model, the following watershed divisions and general wetland types were decided and finalized:

- Great Salt Lake: approximately 3300/3500 South northward: saline depression wetlands
- Jordan River: 3500 South through Northern Alignment in Utah County: slope wetlands
- Utah Lake: Northern Alignment through Southern Alignment: slope wetlands

References:

- Brinson, M.M. 1993. A hydrogeomorphic classification for wetlands. Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. 79pp + appendices.
- Brinson, M.M., F.R. Hauer, L.C. Lee, W.L. Nutter, R.D. Rheinhardt, R.D. Smith, and D. Whigham. 1995. A guidebook for application of hydrogeomorphic assessments to riverine wetlands. Technical Report WRP-DE-11, U.S. Army Engineer Waterways Experiment Station, Vicksburg, M.S. 113pp + appendices.
- Keate, N.S. 2004. Functional assessment of Great Salt Lake ecosystem slope and depression wetlands. Unpublished technical report revised in August, 2004. Utah Division of Wildlife Resources. 36pp.
- Nnadi, F.N., and B. Bounvilay. 1997. Land use categories index and surface water efficiencies index. Report prepared for the U.S. Army Corps of Engineers, West Palm Beach, Florida. Department of Civil and Environmental Engineering, University of Central Florida, Orlando, Florida. 34pp.

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ENVIRONMENTAL
IMPACT STATEMENT

TECHNICAL MEMORANDUM

UDOT Project No. *SP-0067(3)0

Resource Agency Concurrence:

Corps and USFWS concurrence on this memorandum was received in the attached emails.

3/09/2005 Email from Corps

From: Defreese, Amy SPK [Amy.Defreese@spk01.usace.army.mil]
Sent: Wednesday, March 09, 2005 12:43 PM
To: Vince Izzo; Betsy_Herrmann@fws.gov
Cc: Sibul, Matt; TeriAnne Newell; Black, Rick; ljones@swca.com
Subject: RE: MVC Wetland Resource Assessment Plan Tech Memo

Vince -

The tech memo looks good. I think we are on the same page. It will be good documentation to have, thanks for doing it!

Amy

From: Vince Izzo [mailto:izzov@kayacorp.com]
Sent: Monday, March 07, 2005 9:19 AM
To: Defreese, Amy SPK; Betsy_Herrmann@fws.gov
Cc: 'Sibul, Matt'; 'TeriAnne Newell'; 'Black, Rick'; ljones@swca.com
Subject: MVC Wetland Resource Assessment Plan Tech Memo

Amy,

Attached is a revised tech memo on how the MVC wetland assessment is being conducted. This tech memo provides additional information on the elimination of the wildlife and habitat components from the wetland assessment and how platted developments are handled. Rick Black of HDR is currently working with Betsy of the USFWS on developing a detailed wildlife impact assessment for the EIS.

This memo should address the final questions that the Corps had brought forward in your February 4 email to me.

If you have any questions please let me know.

Vince Izzo
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